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# **China Report**

**AGRICULTURE**

**No. 106**



**FOREIGN BROADCAST INFORMATION SERVICE**

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20 October 1980

CHINA REPORT  
AGRICULTURE

No. 106

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## I. GENERAL INFORMATION

### **RENMIN RIBAO' URGES LAND IMPROVEMENT IN MOUNTAIN AREAS**

HK070236 Beijing RENMIN RIBAO in Chinese 29 Sep 80 p 2

**[Article by commentator: "Speed up Development of the Mountain Areas, Carry Out Comprehensive Harnessing of Water, Soil and Forests"]**

**[Text]** The report on the survey of the Taihang Mountains is worth reading citing vivid facts, it shows that we must act according to objective laws when harnessing barren hills and implement the policy of comprehensive harnessing of water, soil and forests. This is a key issue in mountain area construction.

There are vast mountain regions in our country. Over a long period of time, some places cut trees indiscriminately, and destroyed the forests and grasslands for the cultivation of crops because they did not recognize the importance of conservation and vegetation. The green hills and clear waters of the past are now barren hills, while soil erosion is very serious. This not only makes the mountain peasants suffer but also affects agricultural production on the plains. We must genuinely learn a lesson from this, enhance our understanding and correct the past erroneous practices.

Suiting measures to the local situation is the basic principle of agricultural production. Production in mountain areas is no exception. Facts have proven that it is unsuitable for the mountain areas to take grain as the key link. Instead, we should base our work on the different characteristics of large mountain areas, semi-mountainous areas and hilly areas, seek truth from facts and set different key links for production. We must either give priority to forestry, or integrate forestry with animal husbandry, or forestry with grain, and promote diversified undertakings. In Xingtai County's remote mountain areas, at first they planted whatever trees were available and the survival rate was quite low. Later, they changed to planting saplings suited to local conditions, and the survival rate was thus raised. However, the short-term benefit was not great. Considering the economic effects, they also planted some fruit trees of relatively high economic value, twigs of the chaste tree and wild jujube, which yield fruit in the same year. By proceeding from the actual situation, and integrating the long-term with the short and using the latter to promote the former, better economic effects were scored.

To harness barren hills, we must carry out comprehensive harnessing of water, soil and forests. The gullies in the remote mountain areas of Xingtai County were harnessed by digging ditches and harnessing slopes at the same time. On the one hand, numerous trees were planted and forests cultivated; on the other hand, many small ponds were dug on the mountain slopes for holding water. Many level ditches, dykes and embankments were constructed. By doing this, they have basically achieved "holding flood water within the ditches, and preventing the soil from falling down the slopes." To transform nature, construction and biological measures must be closely integrated. We can make use of the construction projects like reservoirs, embankments, ditches and pumping stations to block, retain, divert, raise, dispatch and transport water. Cultivating forests and growing grasslands can biologically contain natural rainfall. At the same time, they can regulate the surface runoff and preserve water and soil. According to the observations of scientific research units in the northwest Loess Plateau, if the total rainfall is 340 mm, the amount of soil eroded from forestry land is 4 kilograms per mu; on grassland, the amount is 6.2 kilograms; and it is 238 kilograms in cultivated areas. On land lying fallow after cultivation, it can be as much as 450 kilograms per mu. Construction and vegetation measures should supplement each other. One-sidedness in ideology, thinking in terms of absolutes, or having a one-track mind in actual work will bring about unfavorable results. Since the establishment of the PRC 30 years ago, we have scored significant achievements since we took improving the soil and regulating rivers and watercourses as the key link in agricultural capital construction. This played an important role in preventing droughts and floods, eliminating floods and promoting the development of agricultural and animal husbandry production. However, over one period of time, due to lack of experience, the leading departments seriously ignored the vegetation measures of cultivating forests and growing grasslands in their guiding principles for agricultural capital construction. Therefore, it is necessary that we attach great importance to stressing the importance of vegetation measures. In future, we still have to promote conservancy projects, but at the same time, we must devote equal energy to promoting forestry so that the measures taken in construction and vegetation can support each other and we can unify transforming the mountains with taming the rivers.

To tame the rivers we must transform the mountains. In our country, some rivers flood frequently. Various factors cause this calamity. There are factors concerning hydrology and meteorology, the capacity of flood discharge and so on. The mountain areas are the source of large and small rivers. If there is little vegetation in the upper reaches of a river, once there is concentrated torrential rain, the middle and lower reaches will flood. Moreover, in forest areas, the flood season of rivers and streams is usually half a month or 1 month later than regions with little or no forest, thus the concentration of runoff is greatly mitigated there. The masses are right in saying: "Planting trees in hills is like building reservoirs; they can absorb heavy rainfall and supply water when no rain falls." To bring floods under permanent control, constructing water conservancy projects

and grasping afforestation in mountain areas in the upper reaches of rivers are important aspects of carrying out comprehensive harnessing of floods in rivers and streams. The tributaries of the Hai River rise in the Taihang Mountains. If the Taihang Mountains plant trees and construct embankments like the remote mountain areas in Xingtai, it will be very beneficial for harnessing the Hai River. With this added to the measures taken to build water conservancy projects on the middle and lower reaches and the afforestation on the Hebei Plains, it will not be long before the Hai is under permanent control.

CSO: 4007

NATIONAL

'XINHUA' REPORTER, CORRESPONDENT ON STATE SEED FARMS

OW071127 Beijing XINHUA Domestic Service in Chinese 0306 GMT 7 Oct 80

[Letter from XINHUA correspondent Shu Daixin and reporter Ju Bomin: "The Problem of Seed Farms Consuming the Seeds They Produce Must Be Solved"]

[Excerpts] Beijing, 7 Oct (XINHUA)--Seeds are the most fundamental means of production in agricultural production. To utilize crop seeds of fine strains is an important measure in increasing agricultural production. Since ancient times, peasants in China have always regarded seeds as the basis for the development of production. If one is not poor to the point of dying from starvation, who would be willing to consume grain reserved for seeds? However, with the state demanding that state seed farms in China consume the "grain they produce themselves," they have no alternative but to regard the seeds they grow as a source of food and fodder. This tendency is becoming more and more prevalent. Recently, we learned from the China Seed Company that last year the 2,290 state seed farms in the whole country turned out more than 700 million jin of seeds of all kinds including those of grain, cotton and oil-bearing crops. More than 200 million jin of them were consumed as food and fodder by people and draft animals on these state farms. An investigation shows that the more than 70 seed farms in Nei Monggol consumed over 14 million jin of seeds as food, accounting for 47 percent of the total seed output in the autonomous region. These farms have only provided the state with 12 million jin of seeds.

**Why do state seed farms consume the seeds they produce themselves?**

**The three main reasons are as follows:**

1. For many years, the departments concerned have not adopted measures to completely solve the problem of food grain for the workers of the state seed farms and their dependents. This has forced some workers and their dependents to use the seeds they produce as food grain.
2. The seeds of fine strains of the state seed farms are supposed to be sold to the local seed companies. The seed companies then trade food grain for seeds. However, the seed farms have to wait for 3 to 6 months before

the food and fodder grain arrive at the seed farms. To solve the problem of a temporary food shortage during that period, the state seed farms must retain a part of the seeds they grow as their own food grain (or edible oil supply), before they hand over the seeds to the local seed companies.

3. As compared with seeds, the food grain supplied to the seed farms is very inferior in quality. On the other hand, the food grain supplied costs three to five fen more per jin as compared with the price of the seeds sold to the seed companies.

As a result, the state seed farms prefer to consume the seeds of the fine strains they grow rather than the food grain it is supplied with.

As early as 1962, the State Council in its "Decision to Strengthen the Work of Seed Cultivation" had clearly pointed out: "Farms that carry out agricultural experiments should be exempted from fulfilling the state grain purchase targets. The seeds of the fine strains they cultivate should be delivered to seed stations for proper management and propagation." However, in some localities, a number of leading organs have not only failed to help seed farms completely solve the problem of food grain, but even now, they still let the seed farms shoulder the burden of fulfilling the state grain purchase targets. If the departments concerned are able to help save the 200 million jin of seeds consumed by the state seed farms in China, the total area sown with seeds of fine strain in the whole country will be expanded by 20 to 30 million mu, and the total grain output of the state and the collective increased by one to two billion jin. Why is not this kind of good deed which benefits the state and the people not being carried out?

CSO: 4007

NATIONAL

BRIEFS

FORESTRY ECONOMY SOCIETY INAUGURATION--Beijing, 18 Sep--The China Forestry Economy Society was recently inaugurated in Beijing with Yong Wentao elected chairman and Yu Guangyuan serving as adviser. Simultaneously with the inauguration of the society, the first Nationwide Forestry Economy Academic Forum was held with some 100 representatives from scientific research units, schools and production enterprises attending. Some 200 papers were heard at the forum. [Beijing XINHUA Domestic Service in Chinese 0120 GMT 18 Sep 80]

RURAL CROP MANAGEMENT--Beijing, 18 Sep--The masses in China's vast rural area are intensifying field management for late-autumn crops in efforts to make up the losses in summer grain and early-rice output caused by natural disasters. The area of late-autumn crops accounts for one-third of the total area of crops planted in the whole year. Recently the bad weather characterized by waterlogging in South China and drought in North China has started to improve and the peasants are seizing the opportunity to tend their crops. As a result of implementing flexible rural economic policies this year, the peasants' burden has been alleviated and their enthusiasm for resisting natural disasters and winning a rich harvest is rising. [Beijing XINHUA Domestic Service in Chinese 0140 GMT 18 Sep 80]

BRIGADE'S HYBRID RICE YIELD--Nanjing, 18 Sep--Nearly 100 delegates to the National Hybrid-Rice Scientific-Research Cooperation Conference recently visited Aishanxi production brigade, Lianfang Commune, Pixian County, Jiangsu Province, where there were 1,300 mu of high-yield hybrid rice seed plots and 120 mu of hybrid paddy rice free of insects and any impurities. Lin Shan, vice president of the Chinese Academy of Agricultural Science spoke very highly of the brigade's achievement. For three consecutive years, the brigade's hybrid rice yield has been around 1,500 jin per mu. Last year, the "Nanjou No 2" variety yielded 1,711 per mu. [0W221431 Beijing XINHUA Domestic Service in Chinese 0319 GMT 18 Sep 80]

GOAT MILK PRODUCTION--Jinan, 26 Sep (XINHUA)--Recently the ministries of agriculture, light industry and commerce jointly sponsored a national goat milk production meeting in Laoshan County, Shandong Province. The meeting was attended by representatives from those counties which are milch goat production centers in the country. According to statistics revealed at

the meeting, last year China produced some 7,000 jin of goat milk products, accounting for 15 percent of the total output of dairy products in the country. By the end of last year, the number of milch goats in China reached some 2 million head. The total goat milk production last year amounted to 470 million jin, showing a 2.6-fold increase above 1978. Now most of the 29 counties classified as milch goat production centers in the country have set up milk processing plants. [Beijing XINHUA Domestic Service in Chinese 0141 GMT 26 Sep 80]

**MORE ON MULTI-EAR CORN**--Beijing, 26 Sep (XINHUA)--China has achieved initial success in developing a multi-ear corn strain. Since each plant of this strain bears three or four ears instead of one or two as in the case of the ordinary strain, the output per mu is generally greater. The success in developing this new strain is credited to Zhou Zishu [0719 1311 1859], a deceased engineer of the Genetics Institute of the Chinese Academy of Sciences, who started the research in this respect 20 years ago. In 1978 the corn seeds he developed were test-planted in more than 130 counties in various parts of the country. The results showed that the new strain of corn, if sown in spring, gives a yield of 500-1,600 jin per mu, which is 14-125 percent more than the ordinary strain. If it is sown in summer, the yield is generally 450-1,000 jin per mu, or 11-73 percent higher than the ordinary strain. Since Zhou Zishu passed away in February this year, the research work in this respect has been continued by his colleagues in the Genetics Institute. [Beijing XINHUA Domestic Service in Chinese 1149 GMT 26 Sep 80]

**MARKETABLE CATTLE**--Beijing, 26 Sep (XINHUA)--Through 2 years of efforts, China has achieved initial results in developing the production of marketable cattle. Now there are 200 counties which have been built into production centers for marketable cattle. Scientific methods are practiced for raising cattle, and artificial insemination is used for their propagation. At present there are 16 frozen semen storage stations, 13 supply stations which provide liquid nitrogen for use in storing frozen semen and many artificial insemination spots in these counties. In 1979, they sold 68,900 head of beef cattle to the state, accounting for more than 90 percent of the beef cattle which the state purchased from various sources. With the abundant cattle supply, the country's export of live beef cattle in 1979 increased 84.9 percent compared with the preceding year. [Beijing XINHUA Domestic Service in Chinese 1214 GMT 26 Sep 80]

**OIL-BEARING CROPS OUTPUT**--Beijing, 30 Sep (XINHUA)--China has increased oil-bearing crops production in 1980 despite unfavorable weather conditions. Total output is higher than in 1979, a good-harvest year. In the past 3 years Shandong turned out over 10 million dan more peanuts as compared with original plans. Total sunflower output in Liaoning, Jilin and Heilongjiang in 1980 is 50 percent higher than in 1979. [Beijing XINHUA Domestic Service in Chinese 1423 GMT 30 Sep 80]

**AFFORESTATION ACTIVITIES**--Since 1977, 3.2 billion trees have been planted on 15 million mu of the 100 million mu of farmland in the northern China plain. [Beijing Domestic Service in Mandarin 1200 GMT 1 Oct 80]

AGRICULTURAL SCIENTIFIC RESEARCH AWARDS--Beijing 27 Sep (XINHUA)--The Chinese Ministry of Agriculture has recommended 51 research achievements in agriculture and animal husbandry for 1979, awarding first prize to 16 and second to 19. The achievements include: breeding of new strains of cotton, wheat, sweet potato and maize, surveys of wild soybeans and species of pigs, prevention and control of plant diseases and insect pests using beneficial insects, transformation of saline-alkaline land and the use of zinc fertilizer. Meanwhile, the Ministry of Forestry has decided to introduce 18 scientific achievements throughout the country. Among them are fine strains of walnut and Chinese chestnuts, use of a bacillus (bacillus thuringiensis) to fight harmful forest insects and the use of a parasitic wasp to control pine caterpillars. [Text] (062816) Beijing XINHUA in English 071 CNT 27 Sep 80]

XINJIANG: BEET HARVEST IN MONGOLIA--Beijing, 27 Sep (XINHUA)--Xinjiang Uygur Autonomous Region in northwest China has registered a 10 percent increase in total sugar beet output this year, compared with 1979. A good sugar beet harvest is also expected in Inner Mongolia, another major beet growing area in China. Xinjiang's sugar beet yield and its sugar content are the highest in the country. Per-hectare yield last year exceeded 15 tons, equivalent to 2.4 tons of sugar. Sugar beet grows well in Inner Mongolia where there is abundant sunshine and good water and soil conditions and the temperature varies greatly between day and night. The region has 67,000 hectares under sugar beet this year, an increase of 25 percent over last year. [Text] (Beijing XINHUA in English 1231 CNT 27 Sep 80)

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## BRIEFS

RAPE SEEDLINGS--As of 18 September, some 244,000 mu of rape seedlings were cultivated in Fuyang and Suxian prefectures of Anhui Province, an increase of 192,000 mu more as compared with the same period of 1979. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

PEANUTS HARVEST--Wuhu County in Anhui Province has reaped some 28 million jin of peanuts from its 139,000 mu fields this year. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 25 Sep 80 OW]

COUNTY RICE--Changfeng County, Anhui, has begun harvesting its 300,000 mu of middle-season rice. The total output and per-unit yield are expected to reach 300 million jin and 350 jin respectively. This year, more than 75,000 mu of rice fields in the county were affected by natural disaster, but the county will still overfulfill the plan for total output because of an increase in per-unit yield. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 16 Sep 80 OW]

ANHUI AQUATIC PRODUCTION--The Anhui Provincial CCP Committee held a provincial conference on aquatic production 22-28 September. Attending the conference were party and government leaders from all prefectures, municipalities and major fish-producing counties as well as representatives of major state-owned fish farms and advanced fish-breeding communes and brigades. The conference adopted a preliminary plan for fishery development in the next 10 years. It was pointed out at the conference that the province has 10 million mu of watery area, including 8 million mu suitable for fish-breeding. However, the province's fishery output value in 1979 accounted for only 0.32 percent of the total agricultural output value. As a result, the masses were very unhappy about the shortage of fish. The conference maintained that the key to accelerating fishery production was emancipation of the mind and implementation of a more flexible policy. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 2 Oct 80]

CSD: 4007

FUJIAN

BRIEFS

LOTUS SEEDS--Fuzhou, 28 Sep (XINHUA)--A bumper harvest of lotus seeds has been reported from Jianning County, Fujian Province. The total production amounts to 130,000 jin, showing a twofold increase over last year. (Beijing XINHUA Domestic Service in Chinese 0113 GMT 28 Sep 80 GW)

CSO: 4007

GUANGDONG

BRIEFS

GUANGDONG AGRICULTURAL PLANNING CONFERENCE--The Guangdong Provincial People's Government held a provincial conference on agricultural zoning from 25 August to 8 September. Some 250 people attended the conference and Vice Governor Meng Xiande presided over the conference. The meeting summed up past experiences in promoting agriculture and came to the conclusion that science is important in promoting agriculture. It is necessary to do a good job of agricultural planning to speed up agricultural development. The meeting further pointed out that party committees and governments at all levels must attach importance to agricultural zoning and bring the role of technicians into play. The meeting demanded that departments concerned carry out inspections over land, water conservancy, climate and living conditions throughout the province in 5 years' time in order to develop planning on agricultural zoning for local conditions. [HK060702 Guangzhou Guangdong Provincial Service in Mandarin 1120 GMT 14 Sep 80]

CSO: 4007

HEILONGJIANG

BRIEFS

MUDANJIANG HARVEST REPORT--Mudanjiang Prefecture in Heilongjiang Province has collected 1.7 million jin of honey and 380,000 jin of edible fungus. The total value of the minor autumn harvest of honey, edible fungus, mushrooms, medicinal herbs, wild grapes and wheat straw reach some 9.038 million yuan. [Harbin Heilongjiang Provincial Service in Mandarin 1100 GMT 22 Sep 80]

CSO: 4007

BRIEFS

**HENAN STATION COMMENTARY**--Henan station carried a commentary on 14 September on attaching importance to studying the new situation and improving farmland water conservancy facilities. The commentary held: it is necessary to consolidate and strengthen the water conservancy force in order to improve farmland water conservancy facilities. We must appoint professional people to be in charge of water and electricity projects and mechanized and electrical facilities. We must seriously deal with people who damage these projects and punish people in accordance to the law for any criminal negligence. Party organizations and governments at all levels must enforce the new responsibility system and popularize new experience to further improve water conservancy work throughout the province. [Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 14 Sep 80]

**HENAN FARMLAND CAPITAL CONSTRUCTION MEETING**--A provincial meeting on farmland capital construction and water conservancy work was recently held in Zhengzhou. The meeting summed up past experiences in farmland capital construction and water conservancy work and arranged for water conservancy projects in 1981. About 1,300 small-scale water conservancy projects were started last year and over 1,200 projects have been completed and put into operation this year. The completed water conservancy projects served to irrigate an area of 32 million mu of wheatfields. However, development of water conservancy in the province was inconsistent. Some of the brigades slackened their efforts in this respect when there were no great disasters. In light of this the meeting held that water conservancy is of great importance in agricultural development and demanded that: 1. all places eliminate the remnant poison of the ultraleftist line and work in accordance with objective laws; 2. formulate new practical measures in accordance with the new situation; and 3. rely on young and capable cadres to promote water conservancy work. [Zhengzhou Henan Provincial Service in Mandarin 1130 GMT 14 Sep 80]

CSO: 4007

HUBEI

BRIEFS

PREFECTURE AFFORESTATION--Wuhan, 24 Sep (XINHUA)--Yichang Prefecture, Hubei, has afforested some 1 million mu of land since the beginning of this year. [Beijing XINHUA Domestic Service in Chinese 0702 GMT 24 Sep 80 OW]

CSO: 4007

BRIEFS

HUNAN VEGETABLE SUPPLY--Since August, vegetable supply has been short in some parts of Hunan. The Hunan Provincial CCP Committee and the Provincial People's Government have decided to adopt four measures to improve the situation: 1. It is necessary to implement the principle of taking vegetable cultivation as the key in the suburbs and make full use of unused arable lands. 2. It is necessary to implement planned production and procurement of vegetables. Supply and purchase departments must sign contracts with the production departments. It is necessary to punish and fine those who sell vegetables at high prices in the market before fulfilling the procurement task. 3. Municipalities and counties must grasp the opportunity to grow more vegetables and fulfill autumn and winter sowing. 4. It is advisable to adopt suitable emergency measures as needed. The Hunan Provincial CCP Committee and the Provincial People's Government demanded that the commercial department supply supplementary preserved vegetables. The provincial grain department decided to sow an additional 1.8 million jin of beans and rice in Changsha, Hengyang, Zhuzhou, Xiangtan and Shaoyang Municipalities. [Changsha Hunan Provincial Service in Mandarin 1100 GMT 11 Sep 80]

CSO: 4007

BRIEFS

RAPE PRODUCTION--Wujiang County of Jiangsu Province planted 190,000 mu of rape this year, and the total output amounted to 37 million jin. The county has planned to expand the sown acreage to 230,000 mu, topping last year by 40,000 mu. As of 18 September some 2,700 mu of rape seedlings were planned throughout the county. [Nanjing Jiangsu Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

WHEAT OUTPUT--Thanks to painstaking struggle against natural disasters, total output of 630,000 mu of wheat in Jiangsu's Fengyang County exceeded 200 million jin this year, topping 1979 by more than 10 percent. The county party committee has decided to reopen and expand the (Dajingshan) phosphate fertilizer plant and build more small phosphate fertilizer plants at commune level in order to provide ample supply of chemical fertilizer to autumn wheat sowing. [Hefei Anhui Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

CSO: 4007

NEI MONGGOL

**BRIEFS**

NEI MONGGOL OIL-BEARING CROPS--Ju Ud League, Nei Monggol Autonomous Region, is expecting a good harvest of oil-bearing crops despite natural disasters. The league is now harvesting 1.3 million mu of oil-bearing crops. Total output is estimated at 60 billion jin, up 20 percent over 1979 levels.  
[SK061200 Hohhot Nei Monggol Regional Service in Mandarin 1100 GMT 4 Oct 80]

CSO: 4007

BRIEFS

DAM CONSTRUCTION COMPLETED--A great dam near (Dongdatan) reservoir, Kaiyuan County was completed in early September. This is one of the key water conservation projects of Qinghai Province. This dam is 22 meters high, 450 meters long and has a water storage capacity of 22 million cubic meters. Upon completion, this dam will play a role in alleviating water shortage in the eastern agricultural areas in our province and will provide a certain amount of water for urban areas. [Xining Qinghai Province Service in Mandarin 1100 GMT 22 Sep 80]

CSO: 4007

SHANDONG

BRIEFS

CHANGWEI PREFECTURE TOBACCO HARVEST--The major tobacco productive area, Changwei Prefecture in Shandong Province, reaps a bumper tobacco harvest this year. The total output of the 656,000 mu farmland of tobacco crop is estimated to be more than 1.9 million dans, an increase of 5 percent over 1979. As of 10 September, the total procured volume was more than 1.72 million dans, an increase of 39.3 percent over the last year period. According to the statistics, the prefecture will receive an income of 19 million yuan from the tobacco product. [Jinan Shandong Provincial Service in Mandarin 2300 GMT 16 Sep 80 SK]

CSO: 4007

SICHUAN

BRIEFS

SICHUAN CROP PRODUCTION ARRANGEMENT--SICHUAN RIBAO carried a commentator's article on 12 September on readjustment of crops arrangement and implementing planning on spring-harvested crop production. The article said: it is necessary to act in the light of local conditions to grow wheat, develop production of rape and improve the per unit area yield. The article demanded that leading organs at all levels implement the party's policies to strengthen the system of production responsibility and enhance the peasants' activism in employing new scientific and technological methods. It is necessary to implement these measures to increase the production of spring harvested crops. [Chengdu Sichuan Provincial Service in Mandarin 2300 GMT 13 Sep 80]

CSO: 4007

TIANJIN

BRIEFS

TIANJIN PORK PRICE--The price of pork, which has been reduced during the period of the mid-autumn festival and national day, will be restored to its original price 6 October. The original price was 1.2 yuan per jin.  
[Tianjin City Service in Mandarin 0030 GMT 6 Oct 80]

CSO: 4007

BRIEFS

BEET HARVEST--Xinjiang Autonomous Region has gathered a bumper harvest from 150,000 mu of beet. The total output is expected to reach 400,000 dun, an all-time high record for Xinjiang Autonomous Region.

[Urumqi Xinjiang Regional Service in Mandarin 1620 GMT 28 Sep 80 OW]

PEAR HARVEST--Urumqi, 28 Sep (XINHUA)--Pears are being harvested in Bayingolin Mongol Autonomous Prefecture of Xinjiang Uyghur Autonomous Region. The total output is estimated at more than 3 million jin, exceeding last year's record by more than 30 percent. [Beijing XINHUA Domestic Service in Chinese 0117 GMT 28 Sep 80 OW]

COUNTY CROPS--Yining County, Xinjiang, reaped a good harvest of oil-bearing crops on its 130,000 mu this year. Both per-mu yield and total output were all-time highs. [Urumqi Xinjiang Regional Service in Mandarin 1300 GMT 15 Sep 80 OW]

CSO: 4007

BRIEFS

**YUNNAN GRAIN PROCUREMENT**--Yunnan Province has greatly reduced the quotas for procuring grain so as to relieve the burden on the peasants. In 1979, the province reduced the quotas for procuring grain in some prefectures by 630 million jin. The Provincial CCP Committee and Provincial People's Government recently decided to further reduce the quotas for procuring grain by some 60 million jin. The number of production teams in the province which are exempted from grain procurement has increased from 7,000 before 1978 to now some 26,000, which accounts for 17.9 percent of the total number of production teams. (Kunming Yunnan Provincial Service in Mandarin 1100 GMT 13 Sep 80)

CSO: 4007

## DEVELOPMENT OF SHALLOW SEA HATCHERIES DISCUSSED

### Quick Results Expected

Hangzhou ZHEJIANG RIBAO in Chinese 15 Jul 80 p 2

(Article by Wang Zhuqing [3769 4554 7230]: "Go After the Benefits from the Shallow Sea and Beaches; Actively Develop Ocean Hatcheries", a reprint from ZHEJIANG KEJI BAO [ZHEJIANG SCIENCE AND TECHNOLOGY NEWS PAPER])

[Text] Ocean hatcheries are an endeavor requiring little investment of capital that produce consistent yields, show quick results, and provide great earnings. Vigorous development of ocean hatcheries and the hatching industry possesses major significance for providing the people larger quantities of aquatic products, for increasing exports, and for enlivening the domestic market.

Zhejiang Province faces the Eastern Sea with its more than 2100 islands and inlets. The length of the mainland coast is more than 2200 kilometers, and it is dotted with the mouths of numerous rivers emptying into the sea. It has a broad area of ports, shallow sea, and beaches. The waters teem with living things, plankton, all kinds of shellfish, aquatic plants, fish, and shrimp of numerous kinds. Propagation is rapid, providing conditions for the development of ocean water hatcheries. Preliminary statistics show that a shallow sea and beaches of more than 1.5 million mu exists along the coastline of Zhejiang Province, which can be used for development of hatcheries. This advantage has not, however, been given full play for a long time. In 1979, shallow seas and beaches already in use for hatching throughout the province amounted to only 166,500 mu, only 11.1 percent of the area suitable for hatching. Total output was 780,000 dan, which was only 5.5 percent of total sea catches. It may be seen that a very great potential remains for the development of ocean water hatcheries in Zhejiang Province.

In order to rapidly increase the ocean hatchery industry in Zhejiang Province, the mentality of "emphasizing catches while slighting breeding" has to be overcome. For a long time, quite a few cadres and masses have felt that "breeding for a year is not as good as another net full of catch."

Consequently, not only has the hatching industry been neglected, but unbridled and reckless fishing has destroyed fishing industry resources. Presently, some countries in the world where the fishing industry is advanced have begun to switch from a fish catching industry to a fish hatching industry, and with some success. Relating this new trend in fishery production to the realities of our own province makes it imperative that time and effort be put into improving the ocean hatchery industry.

The blind reclamation of land from the sea to create farmlands is one of the main reasons for the impairment of ocean hatching. In Ninghai County, for example, because of the building of dykes on the beaches and the blocking of ports, the surface of the beach was raised and became hard, destroying the original environment for the growth of organisms. From 1972 onward, large quantities of hatched oysters died, and the hatching area declined from more than 7300 mu to more than 200 mu in 1977. Output of 75,000 dan declined to 29,000 dan. Consequently in order to benefit from the advantages of the shallow sea and beaches for the development of an ocean hatching industry, the pros and cons of the land reclamation question have to be discussed and account taken of the economic consequences. In shallow sea and beach areas suited to the hatching of shellfish, fish, and shrimp, and particularly in basins for young shellfish, the emphasis should be on development of ocean hatcheries and not on land reclamation. In places where dikes have been built but the land not yet reclaimed from the sea, methods should be adapted to the local situation for overall development, rational use, and the restoration and development of fish and shrimp hatching.

During the past several years, Zhejiang Province has hatched (raised) or is presently test hatching (raising) more than 10 varieties of aquatic life including kelp, laver, razor clams, oysters, blood clams, clams, mussels, sea crabs, prawns, barracuda, mullet, and abalone. Except for the water plants, there has been a shortage of the fry and larvae of all varieties. Therefore, scientific research must be intensified and efforts made to overcome problems in artificial propagation of fry and larvae. The larvae of the razor clam can be raised in a confined area or can be collected by scraping or dredging and temporarily raised over winter. Simultaneous with the artificial propagation of mud blood clams (*Arcas subcrenata* Linck), there can be natural breeding in a walking on two legs, so as to bring about an early revival of young clams. Japanese introduction of the method of growing oysters suspended from a raft has met with substantial success. Now a good job must be done of artificial propagation of fish so that reproduction generation after generation will go on in this province. Though still not able to meet production conditions, vigorous efforts should be made to promote the three dimensional hatching of oysters that has been done in Zhejiang Province, and scientific experiments should be continued on the artificial propagation of the young of prawns, abalone and mullet, and barracuda in order to put on a sound foundation a source of supply of young.

## Land Reclamation Proposals

Hangzhou ZHEJIANG RIBAO in Chinese 26 Jul 80 p 1

[Article by Zuo Zhongnou (1561 0112 6180], Provincial Bureau of Reclamation  
"Utilization of Coastal Beaches Has To Be Done with Zhejiang Realities  
in Mind"]

[Text] Editor's Note: Zhejiang Province borders on the Eastern Sea and has a coastline 2700 kilometers long as well as a large area of harbors, shallow coastal waters, and beaches. How to make fullest use of the natural advantages, hasten numerous undertakings in coastal areas, and develop production in the fishing industry is a major problem in getting the most benefit from the mountains and the sea that awaits study and solution. Today, Comrade Zuo Zhongnou expresses some views on this subject. We hope that more comrades will participate in this exploration to provide for consideration various proposals and suggestions combining theory and practice.

Zhejiang Province has a long history of reclaiming land from the sea, which has been of definite strategic significance in the development of the national economy. In recent years, however, some comrades have been more deprecating of sea reclamation endeavors. Now that the Provincial CCP Committee has proposed going all out for advantages from the mountains and the sea, I would like to talk about problems in the overall use of beach resources.

Among Zhejiang's strong points, one is the extremely abundant beach resources. The area of beaches at low tide throughout the province is close to 4 million mu, and they are constantly in process of growing and expanding. They provide both various bases for the growth of agriculture, forestry, livestock raising, sideline occupations, fisheries, and light industry, but also offer an outlet for the use of excess labor. To develop the beaches, it is first necessary to initiate projects to reclaim land from the sea.

Some people presently fear that reclamation of land from the sea may impair the breeding of aquatic products. I feel that there is a difference between fresh water breeding and ocean water breeding. Reclamation of land from the sea stands first among all the other benefits as far as fresh water breeding is concerned. This is so because once the land has been reclaimed from the sea, all the mouths of rivulets and lowlying stretches in the interdicted ports, rivers, and within the reclaimed area will become fresh water surfaces, and will consequently be fine bases for fresh water breeding of aquatic products. At the 6500 mu fish farm in the Xiaoshan County reclamation enclosure, for example, for every mu of water surface, output reached 164 jin. On the southeast coast of Zhejiang Province, the water surface at most of the projects for the reclamation of land from the sea amounts to about 30 percent of the total area. In addition there are also the water surfaces of the upper reaches of rivers and harbors that have been interdicted in the reclaimed area, where fresh water breeding may be developed. A rough estimate of the fresh water breeding benefits brought about in recent times through projects for the

reclamation of land from the sea places annual fish production at more than 40 million jin. Therefore, land reclamation projects not only do not conflict with fresh water breeding, they are a necessary method for its development. As regards sea water breeding, most important at the present is propagation in beach areas, i.e., the propagation of razor clams, blood clams, oysters, and laver. The State Scientific Commission has organized several score specialized research units (including the disciplines of biology and aquatic products). In 1979, they began a comprehensive survey of beach resources at Wenzhou, which demonstrates that the distribution of the beach area breeding industry is determined by the living habits of mollusks, which are located mostly in areas below the mid-tide, while projects for the reclamation of land from the sea are above the mid-tide position, so that there is no fundamental clash of interest between the two. At the present time, there are almost 1 million mu of beach resources in the Wenzhou area, which offer a broad field of activity for the development of agriculture, forestry, livestock raising, sideline occupations, fisheries, and light industry. The major contradiction at the moment is a lack of an overall unified plan for development and use. None of the trades or industries has made full development or use of these resources. What should be pointed out in particular is that the constant buildup through silting of the beaches is a natural objective law in the motion of the coastal lands of Zhejiang. As the beaches become higher through silting, the mollusks automatically move to lower parts of the beach. The breeding of aquatic life in the beaches of coastal southeastern Zhejiang has been through a gradual movement and development toward the open sea since time immemorial. As for the major bases for current beach propagation, through overall development and unified planning, it should be possible and can be possible to protect and lengthen the years of production to get the most economic benefits.

In summary, consideration of the problems has to begin with the realities in Zhejiang; in the development of coastal resources single one stroke solutions are to be avoided.

How can the comprehensive development and use of beach resources be implemented? This is a problem that touches on policy, organization, and funds, and which merits careful study for which various assumption can be made. The first assumption is:

1. The need for a management structure with unified responsibility for comprehensive development of beach resources, which can formulate unified plans for comprehensive development and use in accordance with national marine laws and land laws, coordinating the welfare of all (farm reclamation, aquatic products, transportation, water conservancy, and light industry).
2. Establishment of a businesslike land reclamation company whose principal duty would be the operation of the various sea reclamation projects. Following reclamation, these projects would be developed and used by various production organizations in accordance with unified planning.

3. All projects for reclamation of land from the sea should implement an operational program for walking on two legs using the state and the collective.
4. The speed and scope of development of land reclamation endeavors will depend on the needs of development of the national economy and the availability of capital in making steady progress. During the period of readjustment of the national economy, the emphasis should be placed on the building and training of a technical contingent of core members versed in the reclamation of land from the sea.

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CSO: 4007

RECLAMATION OF COASTAL AREAS DEBATED

Conflict Between Hatcheries, Reclamation

Hangzhou ZHEJIANG RIBAO in Chinese 23 Aug 80 p 2

[Article by Yang Shiyu (2799 1102 3768), Tidelands Enclosure Office, Provincial Farm Reclamation Bureau: "More Discussion of Utilization of Coastal Areas"]

[Text] Editor's Note: The publication in this newspaper of an article written by Comrade Zuo Zhongnou [1563 0112 6180] on the subject of the utilization of coastal areas of this province has aroused the serious attention of quite a few comrades who have hurriedly sent in drafts in order to participate in an exploration of this subject. We will selectively print these drafts one after another. These drafts point to the conflict between enclosure of tidelands for reclamation and the use of coastal areas for hatcheries, and they propose ways of resolving this conflict in light of practical experiences. We hope that more comrades will join in this discussion, offering advice and suggestions beneficial to the large-scale development of our land. Drafts may express personal views, or they may provide work experiences or be survey reports.

The coastal regions of Zhejiang Province are vast and their uses broad. There are also many points of conflict about them, the most prominent of which is the conflict between reclamation and hatcheries. Some people presently feel that hatching endeavors in coastal areas are in a slump, mostly because of enclosures of tidelands for the reclamation of land. I feel one should not say this. Statistics from departments concerned show that in the year 1957, following Liberation, the output of hatcheries throughout the province was 40,000 dan and the coastal area enclosed was about 1,000 mu. In 1978, hatchery output was 720,000 dan and the enclosed area was more than 100,000 mu. These figures tell us clearly that one cannot make the sweeping generalization that enclosure of tidelands destroys hatching. However, neither can we come to the other conclusion and say that there is no conflict between land reclamation and hatching, or say that

land reclamation does not impair hatching. I feel that a problem of contention about coastal areas objectively exists. The correct way to solve this problem is to adopt methods on the basis of the coastal area involved to make rational use of it. On the basis of the actual situation pertaining in our province and on the characteristics of coastal areas, I have proposed the following several principles for a rational use of coastal areas and for the common study of comrades.

First is that the major orientation of use of coastal areas has to be determined on the basis of their individual characteristics. Since coastal areas have a specific geographical position, they possess certain regional characteristics. For example, coastal areas at the mouth of the Qiantang River and in Hangzhou Bay are quite sandy, while in-shore areas along the coast of south central Zhejiang are silted. In river mouth areas the salinity of the ocean water is fairly low, while in the areas of islands and inlets, salinity is quite high. In harbors and bays, waves are small and the water and soil are consequently rich in organisms, while in coastal areas fronting on the open sea, there is a paucity of biological organisms. Consequently, the differences in coastal areas and the suitable conditions required for each industry regulate the orientation of the use of coastal areas.

Second is a rational pattern based on coastal areas with different tides. Coastal areas must be designated as high beach, medium beach, or low beach in accordance with their morning and evening tide characteristics. Medium beaches must be designated in terms of mean tides as well as in terms of the high point and low point of tides as production realities require. In-shore coastal areas of Zhejiang Province tend to be silted with the time of submergence and emergence of the beach, with each tide and the cycle of the tides varying. As a result, separate ecologies and environments have been formed. According to investigations conducted by the biological team of the Wenzhou Test Site Survey Detachment, it is in medium beach harbors and gulfs that organisms are most crowded together and luxuriant. In the case of enclosure of tidelands for land reclamation, given the present level of technology and economic circumstances, the high point is usually about the average tide mark. In areas suited to hatching, a definite conflict between hatcheries and land reclamation exists in medium beach stretches. Therefore, in harbors and bays where hatching is paramount, so long as fish fry farms and certain high beach propagation of mollusks are protected first, high beach land reclamation may be carried out. However, in areas suitable for hatching in harbors and bays, silting caused by man is to be avoided.

Third is the need to give attention to the ecological balance. We call attention to the ecological balance in order to protect and build a good cycle in the system of ecological balance and to prevent and change a vicious cycle. As regards projects that will effect great changes in the ecology and environment such as filling in harbors or interdicting water courses, the total situation has to be looked at, the future considered, the pros and cons weighed, and prudence exercised in action.

Fourth is the need for an economic comparison of many programs when undertaking reclamation, with selective development and use so that the maximum economic benefits may be obtained from coastal areas.

Fifth is coordinated enclosure of the sea to reclaim land, rational allocation of the land, and comprehensive use of the land. Because of the differences in coastal area, it is only possible to determine the main orientation for development and use, but this is not the same as doing things in a blanket fashion. In actual fact, in places where reclamation is paramount, there can be hatcheries, and in places where hatcheries are paramount, there can be land reclamation. The same applies to the salt industry. Only through proper coordination can the one promote the other. In some coastal area, it is only through overall development that the goal of attaining maximum benefits can be achieved. For the reclamation of land as well as for the evaporation of sea water to produce salt and for some ocean breeding ponds (such as for prawns), projects to enclose the sea must be carried out. At the same time, these enclosing projects may be combined. At the present time, some prawn hatching ponds have been built at the edge of salt making areas or in coastal areas reclaimed from the sea.

Just how can a fairly sensible plan for use be formulated? Necessary first of all is a comprehensive survey by many disciplines of resources in the coastal areas of Zhejiang Province in order to understand the situation as regards coastal area resources and to make a quantitative and qualitative evaluation of coastal sea resources. This is a fundamental task for which the expenditure of a certain amount of manpower, financial resources, and material resources as well as a certain amount of time will be required in order to get firsthand material and provide scientific data for economical and rational development and use of coastal resources.

Additionally, in order to assure rational use of land resources and effective management of land resources, establishment of a land resources special management organization is urgently required for the sake of unified and integrated management of land resources from investigation and statistics to examination and approval of plans, from prospecting and design to construction of tidelands enclosure projects to reclaim land from the sea, and from the implementation of laws pertaining to land to the requisitioning of the land.

#### Respecting Natural Laws

Hangzhou ZHEJIANG 2180 in Chinese 23 Aug 80 p 2

[Article by Shi Rende [2457 0088 1795], Zhejiang Provincial Institute of Oceanography and Aquatic Products, Wenzhou Branch: "In Using Coastal Areas, Natural Laws Must Be Respected"]

[Text] In recent years development and use of coastal resources has attracted the serious attention of every trade and industry, and the uses made of coastal areas have gradually expanded. Nevertheless, use of coastal areas is still far from sufficient, and as a result of a lack of knowledge

about natural laws, coordination among sectors is also insufficient. As a result, some conflicts have come about in the process of making use of the resources, and these conflicts have adversely affected full use of natural advantages. Therefore, it is very necessary to launch a wider-ranging discussion of how to make fullest use of natural advantages, and how to use the resources of the coastal seas.

I feel that it is necessary to adapt methods to local situations in the use of coastal resources making the most of advantages within advantages. In the case of coastal areas within Leqing Bay, for instance, there are abundant living creatures, the ocean water is of moderate salinity, and winds are mild and waves calm within the bay, making for very beneficial growth and development of marine life. This area can become a major one in Zhejiang Province for the hatching in coastal waters of qing [5808] and blood clams. Leqing Bay's output of mollusks accounts for 50 percent of that of the entire province, and output of qing [5808] fry amounts to 80 percent. In the Qingbei and Baixi communes located along the coast, economic income from the hatching industry amounts to from 60 to 70 percent of the total. In coastal areas such as this, there should be vigorous development of the hatching industry to make them become the hatching bases in Zhejiang Province for mollusks and prawns. Another example is the coastal areas at the mouth of the Ou River and the mouth of the Ao River. Here a vast area is silting rapidly, and it is a major area for the development of sea enclosures both in order to reclaim land from the sea and for the hatching of fish and crustaceans. Outside the enclosures, mollusks can be propagated in low tide areas. However, since there are large windblown waves there, numerous changes in the surface of the coastal sea, and a shortage of young fish varieties, the propagation area would not be great, and it would not be suitable as a major hatching area. In the coastal regions of some islands and islets, there is a lack of fresh water, with the result that the salinity of the ocean water is high. Such areas are suitable for the development of evaporation of ocean water to produce salt and for the raising of fish and shrimp, but not for reclamation of farmland.

Some comrades have proposed reclamation of land up to the high tide mark, claiming that such reclamation would not impair hatching. As to whether or not all coastal areas should be reclaimed up to the high tide mark will depend on the actual situation in each place. Some of the high tide marks in hatching areas are areas where the young of some species adhere. Once such areas have been enclosed, changes may occur in the underlying surface that would impair hatching. No further enclosures should be made in such coastal areas.

Facts have demonstrated that if it is not possible to protect natural advantages while making use of these natural advantages, the ecological balance may be destroyed and the usefulness of the natural advantages will be lost. Were the exchange of water flow in Leqing Bay to change because of the blocking of Xuanmen Port, and rapid silting occur within Xuanmen causing a great change in the ecological conditions within the bay, the qingzi [5808 1311] would not grow well. Once the islets across the Fang River in Leqing County had dams constructed between them, several thousand

mu of bases for the propagation of the young of species were damaged. The famous Yandang sweet fish [7159 5616 7449 7625] were no longer able to go to sea to spawn and propagate, so this resource has been destroyed, and an abrupt decline in the salinity of the river water was not beneficial for the growth of oysters. These examples cannot help but arouse people's concern and their demands that the leaders rapidly put a stop to further such occurrences or their extension as well as take steps to restore the balance of the ecology. Use of coastal oceans involves a fairly large number of sectors. A unified leadership organization is consequently needed to organize pertinent sectors to coordinate activities. Right now what is needed is for every sector acting under the leadership of a committee designated by provincial agriculture to do joint comprehensive prospecting work along the entire seacoast of the province and to use scientific data to make more perfect recommendations on the use of coastal areas.

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CSO: 4007

BRIEFS

LOWER QUALITY OF AGRICULTURAL CHEMICALS--When I traveled around a short time ago in the course of experiments on the effectiveness of farm chemicals, many people asked me whether farm pesticides were less effective than they should be and whether the quality of farm pesticides had declined. This is actually a misconception. Not only has the quality of farm pesticides not gone down, but on the contrary, there have been improvements in them. The main reasons for the decline in effectiveness of farm chemicals are, however, as follows: Insect pest resistance to the chemicals has increased. Just about all the plant protection personnel in production brigades know this. The most commonly used method of dealing with this resistance to chemicals and a method that is easy to apply is rotation of the kinds of pesticides used, or using a mixture of pesticides. Use of chemicals at the wrong time: Generally speaking, control of insect pests requires that action be taken before the san ling [0005 7881]. If preventive measures are taken after san ling, the resistance to chemicals of the insect pests will have increased and it will become quite difficult to control them. Use of chemicals of insufficiently high quality: Farm chemicals are generally sprayed in a mist, sprinkled, or broadcast on the soil. There are not many problems with the latter two methods in which chemicals are applied pretty much as needed. With the spraying of a mist, however, it is extremely difficult to assure chemical quality. In the case of DDVP and Malathion, which are put into liquid form preparatory to use as a mist, each mu usually requires spraying with about 120 jin. If less is used, spraying will either be insufficiently even or incomplete, thus impairing effectiveness in control. [Text] [Hangzhou ZHEJIANG RIBAO in Chinese 19 Aug 80 p 2] 9432

NINGBO IRRIGATION PROJECTS--Ningbo Prefecture, Zhejiang, has scored marked results in farmland water conservation projects. At present, the prefecture has 80 reservoirs with a storing capacity of over 1 million cubic meters each, and more than 1,400 small reservoirs. All the 28 main rivers and streams of the prefecture have been dredged and widened. With more than 16,000 pieces of irrigation and drainage equipment, the prefecture has brought 2.55 million mu of farmland under electrically powered and mechanical irrigation and drainage. In 1979, the prefecture's total grain output reached 3.07 billion jin. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 14 Sep 80 OW]

WINTER SOWING--Preparations for winter sowing are in full swing in Yuhang County of Zhejiang. As of late September the county had mapped out plans for growing 230,000 mu of spring grains and 138,000 mu of rape, an increase of 5,600 mu over last year. [Hangzhou Zhejiang Provincial Service in Mandarin 1100 GMT 26 Sep 80 OW]

CITRUS PRODUCTION--Hangzhou, 27 Sep (XINHUA)--Qu County of Zhejiang Province is expected to produce some 190,000 dan of citrus fruits this year. A famous citrus-fruit-producing area, this county now has 40,000 mu of citrus trees, some 5 times more than the early post-liberation period. [Beijing XINHUA Domestic Service in Chinese 0211 GMT 27 Sep 80 OW]

CSO: 4007

## Agriculture

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TITLE: "Studies on the Distribution of Photosynthetic Products and the Absorption of Nitrogen Nutrients in Regenerative Rice by Using Isotopes  $^{14}\text{C}$  and  $^{15}\text{N}$ "

SOURCE: BEIJING ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No. 3, Aug 80 pp 1-5

TEXT OF ENGLISH ABSTRACT: This investigation provides evidence that the photosynthetic efficiency of the leaves of regenerative rice is much higher than that of early cropping rice, and the absorption ability of nitrogen nutrients is continually raised from the sprouting to heading stages. Therefore, the field management of regenerative rice should be more important.

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TITLE: "A Study on the Photosynthetic Characteristics of Different Plant Types of Rice"

SOURCE: BEIJING ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No. 3, Aug 80 pp 6-10

TEXT OF ENGLISH ABSTRACT: A series of experiments on 10 rice varieties of different plant types was carried out for two years. It was found that the ecological coefficient of erect middle tall types is larger than that of the droopy-leaved tall type.

The difference of chlorophyll content among rice varieties and leaves at different positions was significant. Top leaves had a higher chlorophyll content and higher net photosynthetic rate, making a contrast to the lower leaves which had a lower chlorophyll content and a lower net photosynthetic rate. Chlorophyll content was positively correlated with the net photosynthetic rate ( $r = 0.534$ ).

Rice varietal differences in the leaf area, net assimilation rate and

(Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 6-10)

assimilation capacity also existed. It was established that the correlation between leaf area and dry weight was still quite evident from the period of the recovery of growth to the time of heading ( $r = 0.962$ ), and it also had an evident correlation between the photosynthetic potential and biological yield (in 1978  $r = 0.86$ ; in 1979  $r = 0.91$ ). The contribution of photosynthetic potential to yield was different under different environmental conditions, yet the contribution to yield per unit photosynthetic potential was nearly the same (regression coefficient  $b = 54.51$  in 1978;  $b = 60.16$  in 1979).

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TITLE: "The Correlation of Photosynthetic Characteristics with the Yield Characteristics in Wheat"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 11-15

TEXT OF ENGLISH ABSTRACT: A significant correlation between the photosynthetic characteristics and the yield characteristics was present in wheat. The correlation of the photosynthesis rate in the booting stage with the number of grains of the main spike indicated significance, with the correlation coefficient being 0.527. The correlation of the photosynthesis rate during anthesis with the weight of 1000 kernels was positive, with the correlation coefficient being 0.756 and the regression coefficient 0.956. The correlation between the photosynthesis rate in the milking stage and the weight of 1000 kernels was negative, with the correlation coefficient being 0.734 and the regression coefficient 91.7. The hybrids selected for their photosynthesis rate possess a

(Continuation of ZHONGGUO NONGYE KEXUE No. 1, Aug. 80 pp 11-15)

higher correlation between the photosynthesis rate and the yield characteristics in their progenies, with the coefficient in  $F_3$  raised to 0.811. The correlation of the photorespiration rate to the weight of 1000 kernels was significantly negative, with the correlation coefficient being -0.521. The correlations of the number of stomata (g fresh weight per unit leaf area) and the photosynthesis rate to the weight of 1000 kernels are identical.

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TITLE: "A Preliminary Study of Sorghum's Fertilizer Absorption"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese  
No. 3, Aug. 80 pp 16-22

TEXT OF ENGLISH ABSTRACT: The results of a pot culture test indicated that sorghum appeared to have two peaks of absorption of fertilizers during the stages of jointing to heading and flowering to ripening. Nitrogen shortage from the early jointing stage had the greatest unfavorable effect on the growth and development of sorghum. When nitrogen was reduced in the seedling stage, the kernel weight (g/1000) was reduced and ripening delayed; therefore, it is of great importance to apply nitrogenous fertilizer before sowing and also during the jointing stage.

The critical period for phosphorous nutrients was in the seedling stage, which was the crucial moment for the application of phosphate fertilizer. During the stage of flowering to ripening, the greatest absorption existed and top dressing of phosphate fertilizer would produce beneficial effects on grain yields.

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 16-22]

Results of the experiments on the nutrient transference pattern within leaves during flowering to ripening stage and the tests of the various application dates of potash showed that top dressing of potash fertilizer at the time of flowering of sorghum might contribute greatly to its ripening as well as to its yield.

The characteristics of the absorption of fertilizers of the two varieties seemed no different from each other, but the sorghum hybrids showed a higher fertilizer absorability than did the ordinary one, especially in the absorption of phosphate fertilizer.

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TITLE: "Studies on the Performance of Dwarf Stocks of Apple Trees"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE (SCIENTIA AGRICULTURA SINICA) in Chinese No 3, Aug 80 pp 23-26

TEXT OF ENGLISH ABSTRACT: To ascertain the influence of dwarf stocks on the growth and fruiting of apple trees, a comparative experiment on stocks was conducted from 1965 to 1978 by grafting the "Starkrimson" apple trees on self-root stocks and intermediate stocks of M2, M5, M7 and M9, with *Malus baccata* stock as a check. The results were as follows:

1. Apple trees of dwarf intermediate stock had larger bodies than did those of the same varieties grafted on self-root stock. They could adapt to a wide range of soils, set more fruits, and overcome the defects of self-root stock in poor root systems and propagation, thus meeting requirements of planting fruit trees in mountain areas and on riverside banks.
2. Both the dwarf stock and the self-root stock apple trees had the characteristics of early fruiting, high yields, fine quality, as well as small tree size, which suited close planting, mechanical operation and renewal of trees. Among the stocks tested, M9 used as an intermediate stock was the best one.

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 23-26]

3. The important factors of early maturity, high and stable yields for dwarf stock apple trees were attributed to their slower vegetative growth when compared to standard stock apple trees, short branches, more axillary branches, high efficiency of photosynthesis and the capacity of continually bearing fruits.

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ORG: LIU and CHEN both of the Agricultural Research Institute of Changwei District, Shandong Province; LI of the Institute of Crops, Shandong Academy of Agricultural Sciences; SU, ZHOU, BAO and ZHANG all of the Department of Biology, Shandong University

TITLE: "A Preliminary Study on the Male Sterility Produced by Hybridization between Triticum compactum and Triticum aestivum"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 27-33

TEXT OF ENGLISH ABSTRACT: By reciprocal crosses between Triticum compactum and Triticum aestivum, it was possible to segregate 2-3 percent complete male sterile plants in  $F_2$ . Triticum compactum was used as the female plant and crossed

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 27-33]

by male plants of Triticum aestivum--"Zhongyin" No 2 and 755095. By backcrossing these two hybrids with their male parent, we obtained a new male sterile type with stable sterility (now named "Mi-Pu-type" male sterile line). In a few testcross combinations we found some restorer materials, such as F49-70, etc.

According to the probability of producing sterility and hereditary behavior, the Mi-Pu-type was remarkably different from the T-type male sterile line. Therefore, the cytoplasm of Triticum compactum may be considered the new type of cytoplasm from which sterility arises. This male sterile line obtained by crosses of the lines of closely-related breeds of Triticum aestivum may produce more restorer lines than will the T-type male sterile lines, and it will be easier to obtain more hybrid combinations of more vigorous heterosis to promote wheat production.

AUTHOR: WEI Jingren [5898 7234 0088]

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TITLE: "Genetic Analysis of the Mediate Type Self-Bred Pop-Flint Corn"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 34-40

TEXT OF ENGLISH ABSTRACT: The genetic features of some main characteristics of the mediate type pop-flint corn, such as the number of ears per plant, 1000 grain weight, combining ability and grain type, etc., were analyzed. The phenotype correlation of the hybrids' major characteristics in plot yield were also analyzed.

It is considered that the selection of the self-bred lines of the mediate type is very promising as a new way of gaining a corn hybrid possessing multi-ears (or two ears) per plant with high yield and of good quality. By self- and test-crossing on the same plant in the early generation, it may raise the accuracy in self-bred selection and shorten the breeding time.

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 34-40]

The proper proportion of the characteristics of the two adopted subspecies is a key to the selection of self-bred lines. More attention must also be paid to the complement of the parents' characteristics in selecting and pairing hybridized combinations.

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et al

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TITLE: "Studies on Fusarium Wilt Resistance of the Cultivar Resources of Cotton"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 41-46

TEXT OF ENGLISH ABSTRACT: In order to evaluate cotton's resistance to fusarium wilt, 3,710 samples from the national cotton resource collections, including Gossypium barbadense (278), G. hirsutum (3102), G. arboreum (308), G. herbaceum (5), and Gossypium sp. (17), were inoculated with Fusarium oxysporum f. sp. vasinfectum. Twenty-three of the samples were immune (0.62 percent), 164 were highly resistant (4.42 percent), 187 resistant (5.04 percent), 351 tolerant (9.46 percent) and 2,985 susceptible (80.46 percent) to the wilt pathogen inoculated. Generally, G. arboreum may be ranked as the most resistant, G. hirsutum as moderately susceptible and G. barbadense highly susceptible. Some

[Continuation of ZHONGGUO NONGYE KEXUE No 1, Aug 80 pp 41-46]

G. hirsutum cultivars, such as 52-128 and 57-681, had been adopted as the source of resistance in the breeding of resistant varieties. These cultivars were selected from the naturally infested fields and remained highly resistant and stable for decades since their deliverance. Most of the G. arboreum collections were the domestic varieties from the Changjiang Valley. None of the G. hirsutum collections were qualified as resistant sources against fusarium wilt. Seedling resistance was proved to coincide with the resistance from the flowering stage.

AUTHOR: HLANG Shangqiong [7806 1424 8825]

ORG: Institute of Oil Crops, Chinese Academy of Agricultural Sciences

TITLE: "Preliminary Investigation of the Differences of the Compositional Changes of Fat and Fatty Acids in Developing Rape Seeds"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 47-51

TEXT OF ENGLISH ABSTRACT: The changes of dry matter and fat accumulation in developing rape seeds followed a sigmoid pattern. The chlorophyll constituent was present throughout development, and the relationship between oils and chlorophyll content strongly indicated that the chlorophyll might play an important role in the oil formation. The composition of oils and fatty acids had an obvious phasic change in developing rape seeds.

According to the change of the chemical constituents of rape seeds, seed development might be divided into three phases. Fat formation was mainly accomplished in the mid-phase. In the oil accumulation rate of a developing embryo, the high oil content varieties were higher than were the low oil content ones. In the accumulation rate of erucic acid, the high erucic acid

[Continuation of ZHONGGUO NONGYE KEXUE No. 3, Aug 80 pp 47-51]

varieties were higher than were the low oleic acid ones, but in the accumulation rate of oleic acid this situation was reversed.

The data of this report pointed out that the correlation between oleic acid and elaidic acid was obviously negative. The differences in the accumulation rate of fat and fatty acids in different varieties of developing rape seeds showed the differences in the genetic bases of different rape varieties.

AUTHORS: WANG Yongjian [ 3769 3057 0256]  
WANG Xiusheng [ 3769 4423 3932]

ORG: Both of the Institute of Vegetable Crops, Beijing Academy of Agricultural Sciences

TITLE: "A Preliminary Study on the Combining Ability of Some Quantitative Characteristics in Autumn Cucumber"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 52-57

TEXT OF ENGLISH ABSTRACT: The combining abilities of the flowering period, mature period and yield, etc., in autumn cucumber crosses were analyzed, and the results showed that the variation in these characteristics behaved similarly in the following aspects: (1) Both general and specific combining ability effects were statistically highly significant indicating real differences among parental lines; (2) Lines 24-3-22-2 and 3-6-11-13-3-9 manifested significantly greater combining ability than did the others; (3) Additive variance predominated in the phenotypic variation while the non-additive portion was somewhat remarkable; (4) The estimates of heritability were between 40 and 50 percent, except those of mean weight of single fruit which had a relatively low value.

AUTHOR: None

ORG: National Cooperative Network of Forecast for Brown Planthopper

TITLE: "The Occurrence of the Brown Planthopper and Its Forecast in China"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese  
No 3, Aug 80 pp 58-64

TEXT OF ENGLISH ABSTRACT: The brown planthopper (Nilaparvata lugens) is a pest of specific feeding habits, low cold tolerance, and with a characteristic of long distance migration. In the year-round rice-growing area south of 19°N latitude, the brown planthopper could continually reproduce, the source of the first population mainly occurring in that same area. In the area between 19 and 25°N latitude the brown planthopper could overwinter on regenerative rice, wild rice and natural grown rice from the shedding grain in various life stages, but there were very few of these planthoppers and the source of their first infestation came mainly from other places. In the area north of 25°N latitude the brown planthopper could not overwinter in any life stage, and the insect source was entirely due to migration from the rice area in the south.

Based on the characteristics of the brown planthopper mentioned above, a nation-wide network of investigation and forecast for the brown planthopper was

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 58-64]

set up in 1977. It has been proved by practice that this measurement can not only ascertain the law of the occurrence of the brown planthopper, but can also effectively guide a short-term forecast and make it possible to wage pest control in a large area, accumulating a large amount of data for further investigation on the law of seasonal migration of the brown planthopper in China.

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TITLE: "Studies on the Occurrence of Wheat Rosette Stunt and Its Integrated Control"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 65-71

TEXT OF ENGLISH ABSTRACT: In recent years wheat rosette stunt has been seriously spreading over most parts of Hebei Province. The most conspicuous symptoms of this disease are yellow and green variegated narrow stripes on the upper leaves accompanied by more abundant tillers and the stunted plant.

Through electron microscopic observation it was demonstrated that the pathogen of wheat rosette stunt is a rhabdoid virus. The planthopper (Laodelphax striatellus fallen) is the vector of this virus which is not soil and seed borne nor transmitted mechanically. Tests with aphids and leafhoppers did not give any sign as to their being responsible for virus transmission.

Successive field observations have noted that the peak time of the disease

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 65-71]

occurs in autumn, which is positively correlated with the time of sowing. In spring, two disease peaks exist. They are caused separately by the latent infection in autumn and the infection in early spring. Inoculation tests at various plant growth stages have demonstrated that the infection occurring at the seedling stage of wheat in winter or early spring would cause great damage to the wheat, while infection occurring at the stem extension stage would cause less damage, and no effect could be produced if the infection occurred at the booting stage.

The vector Laodelphax striatellus fallen produces five generations a year in the middle and southern parts of Hebei Province. The adults of the fourth generation in autumn and the overwintering nymphae in spring are the principal vectors which transmit the virus and cause damage to the wheat in winter fields.

Practical experience in the past years has provided evidence that integrated programs, laying special emphasis on agricultural management and supplemented by the spraying of insecticides, represented a considerable success in disease control. The integrated programs mainly involved: (1) deep plowing and eradicating the grasses in large areas before sowing for the purpose of reducing the amount of sources of vectors and viruses; (2) not intercropping winter wheat

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 65-71]

with cotton and other autumn harvested crops; (3) sowing winter wheat at the optimum time and not too early; (4) spraying insecticides according to the information about the vector and other considerations.

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ORG: Northwest Agricultural College

TITLE: "Causes of and Solutions to Reduced Stripe Rust Resistance in Chinese Wheat Varieties"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 72-77

TEXT OF ENGLISH ABSTRACT: This paper briefly describes the origin and development of the variation of wheat variety resistance to stripe rust, summarizing the successes and progress in research on the cause of and solutions to the problem in China and abroad. A preliminary analysis is given of the cause of the stripe rust resistance in Chinese wheat varieties, suggesting at the same time that the variation of pathogenicity of physiological races of rust is the main cause and that the effect of self-variation of wheat varieties and environmental conditions play a role as well. We are also of the opinion that the cold western regions where the stripe rust may pass the winter as well as the summer, such as the south of Gansu Province and the west of Sichuan Province, are places where variations in stripe rust resistance in wheat varieties are apt to occur, and that some early sowing regions of winter wheat, such as the eastern part of

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 72-77]

Gansu Province, have a "bridge" effect on the dissemination of urediospores of new physiological races of wheat stripe rust from west to east. This paper also points out ways and strategies of control based on the specialities of various wheat variety resistances to stripe rust in China.

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TITLE: "Studies on the Control of the Northern Corn Leaf Blight"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 78-84

TEXT OF ENGLISH ABSTRACT: The northern leaf blight of corn is caused by the fungus Exserohilum turcicum (Pass.) Leonard et Suggs. It occurs mainly in the spring corn areas of northern and southern China and may cause a reduction of yield of 20 percent in the heavily diseased areas, and even as high as 30-50 percent in some severely infected areas.

The results of five years of experiments showed that the mycelium of the pathogen overwintered in the field infected plant and produced new conidia which spread through the air in the second year. The results also showed that the germination rate of the overwintering conidia is low.

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 78-84]

The disease epidemic in the fields may be divided into three stages, i.e., occurrence, infestation and injury. The number of rainy days and the amount of rain in June, July and August are the main factors affecting the occurrence and degree of epidemic of the disease, and may be taken as scales for middle- and long-term forecasting.

More than 1000 corn inbreds and varieties were tested for their disease resistance in seven years. Many of them with the lesion number form of resistance expressed anti-infection. About 200 isolates of the fungus collected from different parts of China were tested, with results showing that all isolates avirulent to plants having gene  $Ht_1$  and  $Ht_2$  and expressing chlorotic-lesion forms of resistance might be the race 1 (US1) of Exserohilum turcicum.

Utilization of resistant varieties along with an integrated control method can protect corn from the damage of this disease.

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TITLE: "Estimation of the Gene Frequency of the Simmental Horn Characteristic in the Chinese Sanhe Cattle Population and Its Application"

SOURCE: Beijing ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No 3, Aug 80 pp 85-90

TEXT OF ENGLISH ABSTRACT: The Chinese Sanhe cattle originated in northeast China. As a result of the cross breeding of Mongolian cattle with the Simmental, Friesian, etc., today some Simmental characteristics exist in Sanhe cattle, one of them being the horn characteristic. By the estimation of the gene frequency and genotype frequency of the Simmental horn characteristic in

(Continuation of Chinese Review Article No. 1, Aug. 80 pp. 85-90)

Simmental & Sanhe cattle ( $F_1$ ), and making a comparison with the data of the  $F_1$  type frequency obtained previously (1962-1965) in the Sanhe region, it is suggested that the Simmental horn characteristic may be controlled by a recessive gene with multiple alleles. According to the Hardy-Weinberg law, this recessive gene frequency  $q$  in the Sanhe population was calculated as 0.1900 and the dominant frequency  $Q$ , 0.8098. In the  $F_1$  hybrid, it was 0.5153 for  $q$  and 0.4847 for  $Q$ , and in the  $F_2$  population  $q$  is 0.8590 and  $Q$  is 0.9208. In combination with the other inherited characteristics, such as white face, coat color, composition and musculature in rear quarters, the horn characteristic gene frequency would be useful in the estimation of the effectiveness of cross breeding the Simmental with Sanhe cattle. The grading system would be the best basis by which a Chinese Simmental breed could be built.

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Title: "Paper Electrophoresis of the Serum Protein Constituent of Healthy Horses and Horses Infected with EIA (Infectious Anemia of Horses)"

Source: BEIJING ZHONGGUO NONGYE KEXUE [SCIENTIA AGRICULTURA SINICA] in Chinese No. 3, Aug. 80 pp. 91-94

TEXT OF ENGLISH ABSTRACT: This article analyzed the serum protein constituent of normal horses in 25 cases and 31 cases of horses infected with infectious anemia by means of paper electrophoresis. The serum protein constituents of normal horses are: albumin  $23.52 \pm 3.04$ ,  $\alpha$ -globulin  $14.24 \pm 2.08$ ,  $\beta$ -globulin  $23.11 \pm 3.85$ ,  $\gamma$ -globulin  $23.13 \pm 4.00$ , and the comparison of albumin with globulin (A/G) is  $0.50 \pm 0.05$ . The serum protein constituents of horses infected with EIA are: albumin  $25.07 \pm 3.24$ ,  $\alpha$ -globulin  $19.18 \pm 4.19$ ,  $\beta$ -globulin  $24.20 \pm 3.74$ ,  $\gamma$ -globulin  $31.45 \pm 6.45$ , and the comparison of the proportion of albumin to globulin dropped to  $0.334 \pm 0.009$ . In comparison with that of the normal horses, it was shown that the albumin of horses infected with EIA diminished relatively,  $\gamma$ -globulin increased conspicuously, and  $\alpha$ -globulin and

[Continuation of ZHONGGUO NONGYE KEXUE No 3, Aug 80 pp 91-94]

$\beta$ -globulin increased a little. During the initial stage the constituents of the serum protein in horses infected with EIA changed only slightly, while in the late stage they changed obviously.

This research proved that paper electrophoresis of the serum protein constituents of horses is instrumental in diagnosing EIA and investigating its pathogenesis.

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CSO: 4009

Meteorology

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TITLE: "Some Numerical Experiments of Geostrophic Adjustment"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 97-105

TEXT OF ENGLISH ABSTRACT: Some aspects of geostrophic adjustment are investigated by numerical experiments with nonlinear barotropic primitive equations in the hemispheric area. The results are in good agreement with those obtained previously by both the linear and nonlinear theories. The characteristic time required for the adjustment process as well as the other quantitative data are given. The problem of four-dimensional assimilation is also discussed, indicating that it would not be of benefit if the updating is made only in the pressure field without treatment of the wind field.

AUTHOR: WANG Liangming [3769 0357 6900]

ORG: Academy of Meteorological Science, Central Meteorological Service

TITLE: "Some Fundamental Thermodynamic Properties of the Saturated Moist Air"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 106-110

TEXT OF ENGLISH ABSTRACT: Considering the condensation process at the initial stage as a generalized adiabatic process and the latent heat of condensation as an inseparable part of the total potential energy of a closed system, we have studied the fundamental thermodynamic properties of the saturated moist air. The results show that all the properties of the dry air could be retained in the saturated moist air, provided the air temperature  $T$  is replaced by the so-called generalized temperature  $T^*$  as an independent variable.

AUTHOR: XIE Yibing [6200 5030 3521]

ORG: Department of Geophysics, Beijing University

TITLE: "The Oscillation of Certain Zonal Mean Characteristics of Atmospheric Motion"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 111-121

TEXT OF ENGLISH ABSTRACT: In this paper the high nonlinear atmospheric motion is considered as a kind of semi- or quasi-eddy motion. By introducing the method of quasi-eddy approximations, i.e., conserving the eddy terms at the beginning and then ignoring some of them after integrating the equations along the latitude circle, the oscillation equations of certain characteristics of atmospheric motion, such as zonal index, zonal mean meridional transport of momentum and vorticity, etc., and their harmonic solutions are obtained. The period of oscillation depends on  $\bar{V}^2$ , a measure of the zonal mean meridional kinetic energy. The period of the first harmonic is about 20 days.

The results may explain to some extent the oscillation of certain zonal mean characteristics of the observed atmospheric motion and the vacillation of experimental simulation.

[Continuation of QIXIANG XUEBAO No 2, Jun 80 pp 111-121]

The main scientific purpose of this paper is to demonstrate that even the high nonlinear extended atmospheric processes might also be attacked by linear theory.

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ZHENG Liangjie [6774 5328 2638]  
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ORG: All of the Department of Geophysics, Beijing University

TITLE: "A Method of Initialization of the Primitive Equation Model Including Real Wind and Height Data"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 122-129

TEXT OF ENGLISH ABSTRACT: A method is presented for initialization of the primitive equation model including real wind and height data. Vertical mean mass divergence is set to zero as a kinematic constraint for eliminating the extra-gravity wave in the initial wind field. Errors in the real wind are altered by assuming that they affect only the divergence part of the flow. The three-dimensional consistent array of velocity components and the height are used as the initial value of the model. The numerical results appear to be better than the balance approximation. This procedure is more effective for the initializing of the sub-synoptic circulation system.

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et al

ORG: All of the Institute of Atmospheric Physics, Chinese Academy of Sciences

TITLE: "A Primitive Equation Numerical Model Including Orography and Non-adiabatic Heating"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 130-141

TEXT OF ENGLISH ABSTRACT: In order to simulate the large-scale dynamic process and improve the numerical weather prediction, a primitive equation hemispherical model is developed.

Characteristic features of the model are as follows: The thermodynamic equation is given. The difference schemes of the model preserve total energy but the difference schemes of the pressure gradient and hydrostatic relation have no constraints. The physical factors of orography, friction, horizontal diffusion, large-scale precipitation, evaporation and various non-adiabatic heating are

[Continuation of QIXIANG XUEBAO No 2, Jun 80 pp 130-141]

included. The radiational heating and cooling is designed to be evaluated directly from the differential expressions given, and the ground temperature is calculated from the solution given without iteration.

The model was tested to give an example of a 48-hour prediction.

AUTHOR: XUE Zhi [5641 2535]

ORG: Lhasa Meteorological Observatory

TITLE: "A Case Study of a Shear Line Producing Heavy Rainfall on the Qinghai-Xizang Plateau"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 142-149

TEXT OF ENGLISH ABSTRACT: In this paper the three-dimensional structure of a shear line producing heavy rainfall on the Qinghai-Xizang Plateau is analyzed. This analysis discloses the existence of a southerly jet in the middle troposphere which has a close relationship to the heavy rainfall.

AUTHOR: FANG Zongyi [2455 1350 5030]  
ZHOU Lianxiang [0719 6647 5046]

ORG: FANG of the Institute of Atmospheric Physics, Chinese Academy of Sciences; ZHOU of the General Observatory of Hydrology and Meteorology, National Ocean Bureau

TITLE: "Estimation of Tropical Cyclone Intensity by Use of GMS Infrared Imagery"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 150-159

TEXT OF ENGLISH ABSTRACT: Using GMS infrared imagery we have summarized four cloud characteristics relative to the intensity of tropical cyclones as follows: the position of the circulation center relative to the deep convective cloud; the characteristics of the eye's form and its size and the degree of clearness in the eye; the characteristics of the central deep convective cloud; and the characteristics of the spiral cloud band. To each characteristic we assigned an index of tropical cyclone intensity. Synthesizing these four indices we obtained a T number characterizing the intensity of the cyclone. We correlated the T number with the central maximum wind speed of tropical

[Continuation of QIXIANG XUEBAO No 2, Jun 80 pp 150-159]

cyclones and obtained the empirical formula  $V_{max} = 7.813(T-1)$ . It is found that we can estimate the maximum wind speed of the tropical cyclone using the GMS data.

AUTHOR: WEN Jingsong [3306 2529 1529]  
GU Weiyu [7357 1983 3254]  
WEI Gongyi [7614 0361 3015]

ORG: WEN and GU both of Anhui Institute of Optics and Fine Mechanics;  
WEI of Beijing Computer Center

TITLE: "A Model of the Distribution of Turbulent Intensity over Shanghai"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2,  
Jun 80 pp 160-164

TEXT OF ENGLISH ABSTRACT: This paper presents a model of the distribution of turbulent intensity over Shanghai. We deduced the turbulence from the mean temperature, pressure and wind fields and also made use of some data of the quivering of star images in deducing these results.

AUTHOR: GAO Guodong [7559 0948 2767]  
LU Yurong [7120 3254 5554]  
LI Huaijin [2621 2037 3866]

ORG: All of the Department of Meteorology, Nanjing University

TITLE: "A Study of the Amount of Evaporation and the Loss of Heat for Evaporation in China"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2,  
Jun 80 pp 165-176

TEXT OF ENGLISH ABSTRACT: In this paper the following problems are discussed:  
1) The various methods used to calculate the amount of evaporation.  
2) Results of the calculation of the amount of evaporation and the loss of heat for evaporation of more than 200 stations in China by N. A. Bagrov's method based on the component values of radiation and heat balance given by the authors and other related climatological data.  
3) The configuration of the time and space distributions of the amount of evaporation and the loss of heat for evaporation in China.

AUTHOR: ZHOU Keqian [0719 0344 0467]

ORG: Institute of Geography, Henan

TITLE: "A Method for Estimating the Evaporation in which the Wasting Heat of Rainwater is Considered"

SOURCE: Beijing QIXIANG XUEBAO [ACTA METEOROLOGICA SINICA] in Chinese No 2, Jun 80 pp 177-181

TEXT OF ENGLISH ABSTRACT: The wasting heat of rainwater is considered, and we have obtained the following formula for estimating the diurnal evaporation

$$E = \frac{\Delta R_n + 0.5 E_a \left( 1 + \frac{I_d}{190} \right)}{\Delta + 0.5 \left( 1 + \frac{I_d}{190} \right)}$$

where  $I_d$  is the daily rainfall (mm). The calculations show that this formula is more accurate than Penman's formula when the rainfall is heavy.

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October 29, 1980

· *Debbie*